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ABSTRACT

This paper summarizes a larger report of the findings of the Developmental Continuity Consortium, a collaborative effort of twelve research groups conducting longitudinal studies on the outcomes of early education programs for low-income children initiated in the 1960's. Summarized are: (1) Methods (problems of secondary analysis, problems of longitudinal research, sample selection); (2) Analysis of Program and Control (analysis of assignment to special education and of retention, of Stanford-Binet IQ scores, of Wechsler IQ scores, and of schooling variables from youth interviews); (3) Analysis of Parental Evaluations; and (4) Conclusions and Implications. (SB)

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COMMUNITY SERVICES LABORATORY, NEW YORK STATE COLLEGE OF HUMAN ECOLOGY, CORNELL UNIVERSITY, ITHACA, N.Y. 14853

Summary Report:

THE PERSISTENCE OF PRESCHOOL EFFECTS

A Long-Term Follow-Up of Fourteen Infant and Preschool Experiments

The Consortium on Developmental
Continuity
Education Commission of the States

Analysis and Final Report by
Irving Lazar, Virginia Ruth Hubbell,
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Inquiries relating to specific studies should be addressed to the individual investigators.

This report was prepared by the Chairman and the Cornell Staff of the Consortium. Inquiries should be addressed to Irving Lazar (Chairman)

Opinions expressed in this report are those of the investigators and do not necessarily reflect the views of the Education Commission of the States or the Administration on Children, Youth and Families (DHEW).

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PART I

INTRODUCTION

Do early childhood intervention programs have a significant, long-lasting impact on low-income children? Head Start was built on the assumption that early education, parental involvement, and the provision of medical and social services could enable children of low-income parents to do as well in school as their middle-class peers and to thus be able to leave the ranks of the poor. Based on this premise, a vast array of programs and curricula emerged. The age of children at entry into programs, the length of intervention, the settings, the teachers, and the materials employed all varied in a flood of new programs for low-income children and their parents.

A few years ago, critics began to attack the effectiveness of Head Start and, indeed, of early education in general. They claimed that such programs have no lasting effect on children's IQ, and that any effects at all fade out within the first year or two of formal schooling. With sufficient numbers of program children now in their later years of childhood and adolescence, it has now become possible to take stock of the actual outcomes of children who participated in infant and preschool programs.

This report summarizes the findings of fourteen longitudinal studies of low-income children who participated in experimental infant and preschool programs over the past decade and a half. It was

conducted as a collaborative effort by a dozen investigators, the Consortium on Developmental Continuity, who agreed to collect common follow-up data in 1976-77 to be reanalyzed and compared by a single, outside group. This analysis, sponsored by the Education Commission of the States and supported by the Office of Child Development (DHEW), was organized and supervised by Dr. Irving Lazar of Cornell University.

We believe that the findings in this report now leave no reasonable doubt that in the main, programs which had deliberate cognitive curricula had a significant long-term effect on school performance. The findings are both too conservative in the methods of data analysis from which they emerge and too dramatic in their consistency and size, for the main effects they found to be spurious. The demonstration that investments in early education have long-term benefits that are both humane and fiscal cannot help but quell the doubts that have effectively frozen such investments for almost a decade.

The programs involved in this Consortium were conducted completely independently of one another, mostly during the early and mid 1960's. They were carried out across the country, in urban and rural areas, in the northeast, the south, and the midwest. The low-income children who were enrolled in these programs now range from nine to eighteen years of age.

This Consortium of investigators realized that they had a unique accumulation of information. What their studies had in common, and what made them worthy of further analysis, was the care with which they were conducted. All were carefully planned from the start, with

rigorous staff training, constant program supervision, periodic evaluation, and at least some follow-up of the children involved. They had explicit and standard intervention programs, so that the content of the child's experience could be specified. In order to enable later assessment of the effects of intervention, measures had been made of the children's abilities before the programs started. Moreover, the studies had allowed for scientific analysis of the effectiveness of their respective programs by selecting either controls--children drawn in advance from the same population who did not participate in the programs--or comparison groups.

The children who participated in the studies generally were from low-income families who were eligible for some type of federal assistance. When they entered the studies they ranged in age from three months to five years. They were predominantly black (87%); the average level of their mothers' education was ten and a half years; 40% did not have a father in their homes; and 51% had three or more siblings.

The studies from which the data presented here were drawn (see Table 1) may be grouped by delivery system into three categories. Center-based studies provided nursery school type programs with varying degrees of structure in the program curriculum. Instruction usually took place in small groups but in some cases was on a one-to-one basis. Parents were kept informed about the programs, visited them and observed them, but were usually not actively involved in the day-to-day educational program.

Table 1: Summary of Studies

PROGRAM	PRINCIPAL INVESTIGATOR	LOCATION	TYPE OF DELIVERY SYSTEM	AGE AT INTERVENTION	YEARS OF PROGRAM
The Philadelphia Project	Dr. Kuno Beller	Philadelphia	center-based	4-6	early '60's
Institute for Developmental Studies	Dr's Martin & Cynthia Deutsch	Harlem	center-based	4-8	late '50's early '60's
The Parent Education Program	Dr. Ira Gordon	northern Florida	home-based	3 mo - 3	mid '60's
The Early Training Project	Dr. Susan Gray	Murfreesboro or Columbia, Tenn.	combination	4-5	early '60's
The Family-Oriented Home Visitor Program	Dr. Susan Gray	Nashville, Tenn.	home-based	0, 1	early '70's
Curriculum Comparison Study	Dr. Merle Karnes	Champaign - Urbana, Ill.	center-based	4	mid '60's
The Mother-Child Home Program	Dr. Phyllis Levenstein	Long Island	home-based	2-3	late '60's early '70's
Experimental Variation of Head Start Curricula	Dr. Louise Miller	Louisville, Ky.	center-based combination	4	mid 60's
Harlem Training Project	Dr. Frank Palmer	Harlem	center-based	2-3	mid 60's
Perry Preschool Project	Dr. David Weikart	Ypsilanti, Mich.	combination	3-4	early '60's
Curriculum Demonstration Project	Dr. David Weikart	Ypsilanti, Mich.	combination	4	mid 60's
Carnegie Infant Program	Dr. David Weikart	Ypsilanti, Mich.	home-based	3 mo - 2	late '60's
Micro-Social Learning System	Dr. Myron Woolman	Vineland, N.J.	center-based	4-5	late '60's
Head Start & Follow Through New Haven Study	Dr. Edward Zigler	New Haven, Conn.	center-based	5	mid '60's

Home-based studies directed their educational efforts primarily toward the parent, usually the mother, as the major instrument of change and influence in the child's life. Activities, toys, and games were brought to the family home by a parent educator or home visitor, who trained the mother to use the activities and to promote her child's development through parent-child interaction. All of these programs dealt with children under four years of age.

The third group of studies combined these approaches, providing a center-based nursery school program coupled with a periodic home visit in which both the parent and child were involved. In some programs the emphasis during the home visit was closely related to the center program; in others it had a more general content.

PART II

METHODS

Data for this study were collected in two stages. First, the original data on individual children, collected independently by the projects prior to their becoming involved in the Consortium, were duplicated and sent to the central office. This original data included any IQ, achievement, or other psychological test data plus demographic information. Second, each project collected current follow-up data utilizing common forms developed by the Consortium. These included a parent interview, a youth interview, school record and achievement test forms, and the age-appropriate Wechsler Intelligence Test.*

No field-based study of real people can meet the design criteria of a laboratory experiment. Each of these studies, singly, can be criticized by those criteria, since real children and real communities do not lend themselves to rigorous control. In looking across these studies it is clear that the "defects" of any one of them are not present in the others. Consistency of findings across studies is a clear demonstration of their validity regardless of differences in their design. In a sense we are looking at independent tests of the same hypotheses. There are virtually no other examples of so many fully independent tests of a single central hypothesis, conducted over so long a period in contemporary social science and brought together in

* Several of the analyses reported here are based on some, rather than all fourteen, of the Consortium studies. This is due to a number of factors, including incomplete data collection at the time of these analyses, differences in sample selection, and noncomparability of original data for some variables.

terms of comparable data, as are represented by the projects in this Consortium. Further, our choices in data and treatment options have been consistently conservative and these choices have minimized our findings.

A. Problems of Secondary Analysis

This report essentially constitutes a secondary analysis of the data from the Consortium members' projects. This is true even though the 1976-77 data were collected specifically for this analysis, since the design of the projects had been determined prior to the collection of these data.

The most basic problem of secondary analysis in general is that the analysis uses data in a manner for which they were not originally intended. A prime example of this is the importance of the Stanford-Binet IQ scores in this analysis. This test was used by the original projects as one of many measures of program effectiveness. However, since the Binet was the test used by more projects than any other, it assumes a much greater importance in the current analysis than it had in the original analyses by the individual projects.

A second problem of secondary research is that the questions which can be posed are limited by the data which have already been collected. One simply cannot ask whether early education affects social skills in the second grade unless the projects measured social skills at that time. This problem is made more complex by the fact that the projects were conducted independently, and, hence, the chances were slim that most projects would have independently collected the same measure at the same time.

A third problem is that the experimental designs of these studies were different, so that comparisons of the programs are always tenuous. A secondary analysis does not give as directly useful information as would a carefully designed experiment of the same size. However, secondary analyses can point out critical variables to be studied in future research, and can serve as a valid guide to policy and program design.

B. Problems of Longitudinal Research

Since this report follows the same subjects over a number of years, it is also subject to the problems involved in longitudinal research. Longitudinal data provide the most valid and direct way of assessing the cognitive, social, emotional, and familial outcomes of programs for young children. Scientifically useful longitudinal data are also the most difficult to obtain, and such research is the most difficult to design and maintain.

The most basic hazard in longitudinal research is that of attrition, i.e., the loss of subjects over time due to death, inability to be located, refusal to participate any longer, etc. Almost all attrition has been due to simple inability to find subjects who have moved. The most complete attrition analyses have been done on a set of six projects involving approximately 600 subjects. Among these subjects, only twenty-two parents and eighteen youths refused to be interviewed. We have looked for differences between lost subjects and other subjects on several variables -- SES, mother's education, and pretest IQ -- and have

found no significant differences. However, analyses on attrition are continuing, especially analyses on differential kinds of attrition between the experimental and control groups.

Another problem of longitudinal analysis is that of test-retest effects, i.e., the fact that the very act of taking an initial test may affect the scores of the second test. This effect is controlled for to a certain extent by comparing the program children only to their controls rather than using a comparison of program posttest to program pretest as a measure of success.*

C. Sample Selection

A discussion of sample selection involves three distinct questions:

1. What are the sources of the subjects?
2. What selection criteria were used to choose subjects from those sources?
3. What procedures were used for assigning children to program or control groups?

1. Most projects recruited their subjects from the general community (typically, a well-defined neighborhood). Two projects (Palmer and Gordon) recruited their subjects from hospital birth records. One project (Woolman) included children referred by the school district because they were considered to be children at risk.

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* While it is highly unlikely that test-retest effects could have been meaningful, given the typical length of intervention in these studies, this more conservative treatment approach was selected to avoid even that source of uncertainty.

2. The selection criteria varied considerably from project to project. All but one (Woolman) used some sort of SES criteria; only one (Palmer) specifically attempted to include middle-class children in the sample. Many projects specified health criteria to eliminate children with organic impairments. Three projects specified IQ cutoffs, contributing to differences between projects on pretest IQ distributions.

3. Assignment of children to program and control groups is a particularly knotty problem in intervention research. The experimental ideal of random assignment to program and control groups is often unattainable in real-life settings, as a consequence of both ethical and practical concerns. On the other hand, "quasi-experimental" studies in which comparison groups are constructed by matching on variables such as SES and pretest IQ can produce seriously misleading results.

In general, the projects included in this report came closer to true experimental designs than is typical in this sort of research. However, there was considerable variation from project to project. Several (Gray, Gordon, Weikart, and Palmer) closely approximated true random assignment. Others (Levenstein, Miller and Zigler) would more accurately be called quasi-experiments. One (Karnes) had no control group. One (Woolman) had a comparison group which differed substantially from the program group in terms of selection criteria, and the Miller control group, constructed from a different population source, was found after the fact to be poorly matched with her experimental group. The analyses reported here took such differences into account and were generally conducted in a conservative manner (that is, in a manner which minimized the chances of obtaining spurious experimental-control

differences). For example, the pooling of results (e.g., in the special education analyses) was done separately for experimental and quasi-experimental studies in order to insure that the findings would stand up if only the most rigorously designed programs were considered.

PART III

ANALYSIS OF PROGRAM AND CONTROL DIFFERENCES IN COGNITIVE FUNCTIONING*

Does the evidence indicate that early education improves the academic performance of low-income children? Our analyses indicate a positive answer to this question. The analyses show that the program children were not assigned to special education classes as often as their comparison groups and the program children were held back in school less often than their comparison groups. In addition, the Stanford Binet IQ data collected earlier indicate that the program children surpass their controls for at least three years after the end of the program. The following sections discuss these analyses.

A. Analysis of Assignment to Special Education and of Retention

Intelligence tests are designed to predict academic achievement. Obviously, actual achievement is a better measure than a predictive instrument. In this section we examine two indicators of actual school performance: assignment to special education, and retention (grade failure). The advantage of using these two outcomes as measures of effectiveness of early education programs is that they are concrete and stringent indicators of whether a child has performed acceptably within his or her educational institution.

The use of these outcome measures, however, does have a drawback in that both outcomes are affected by the policies of the individual

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* Due to differences in sample assignment procedure, comparisons between program and control are made individually for each project; data are not pooled across projects. Rather, the overall evidence is evaluated by pooling the significance levels from the individual program-control comparisons. This technique is found in Darlington, Richard, Radicals and Squares, Logan Hill Press, Ithaca, NY 1975.

states and school districts. While the subjects were originally living in a very small number of communities, by the time of this follow-up they had attended several hundred different schools. Although we do not have information on the distribution of promotion policies or the relative availability of special education classes in most of these school districts, we are assuming that with so large a number they are representative of the national situation, about which some information is available. In addition, since both special education and grade failure are methods for dealing with children who do not meet minimal school requirements, the two may overlap somewhat as outcomes.

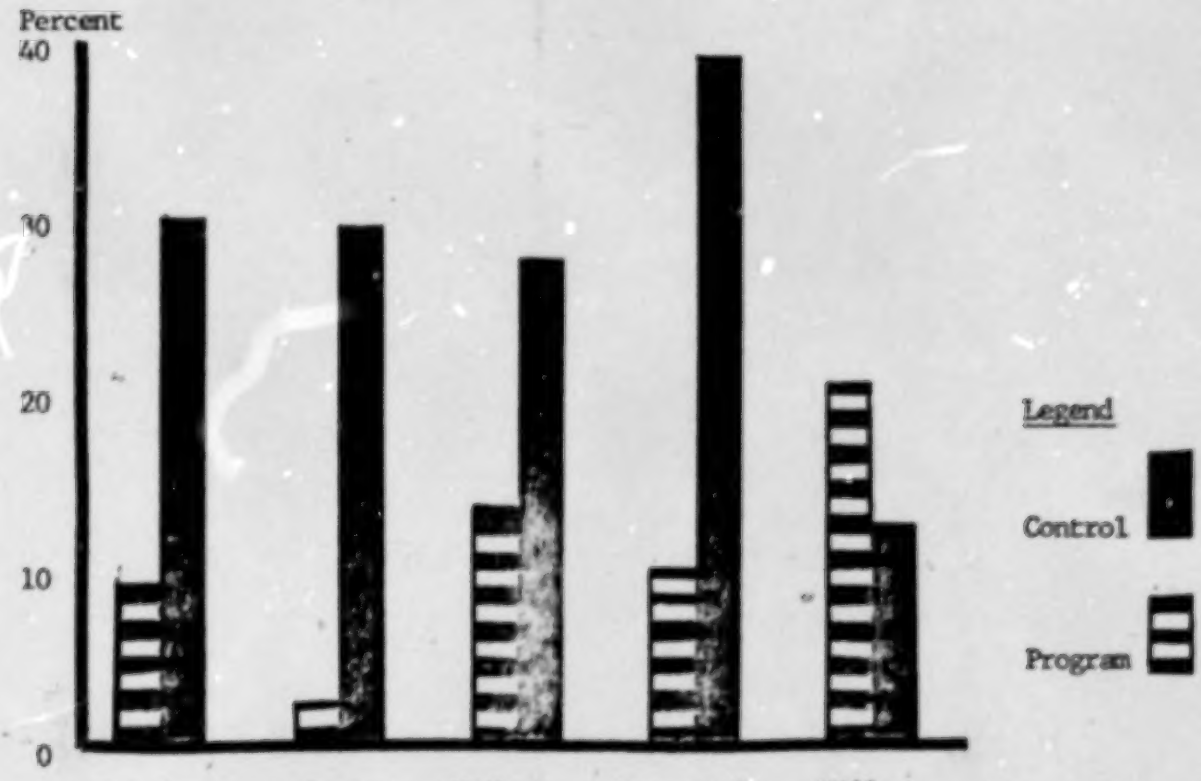
1. Placement in Special Education

The combined evidence from five projects which looked at whether the children had been assigned to special education classes presents strong evidence that early education for low-income children significantly reduced the number of children assigned to special education (see Figures 1 and 2).*

It is important to note that the projects with the most nearly random procedures for assigning children to program or control groups had, in general, the most impressive results. The Gordon, Gray, and Weikart projects had the most stringent sample assignment procedures (most closely approximating an experimental design). Gordon's project showed 9.4% program children in special education compared to 30.0% control; Gray's, 2.8% program to 29.4% control; and Weikart's 13.8% program to 27.7% control. The only project in which a program advantage was not found, Miller's, had a nonexperimental procedure for creating a control group due to the fact that the project was primarily concerned

* The pooled significance level (two tailed) is less than .0002.

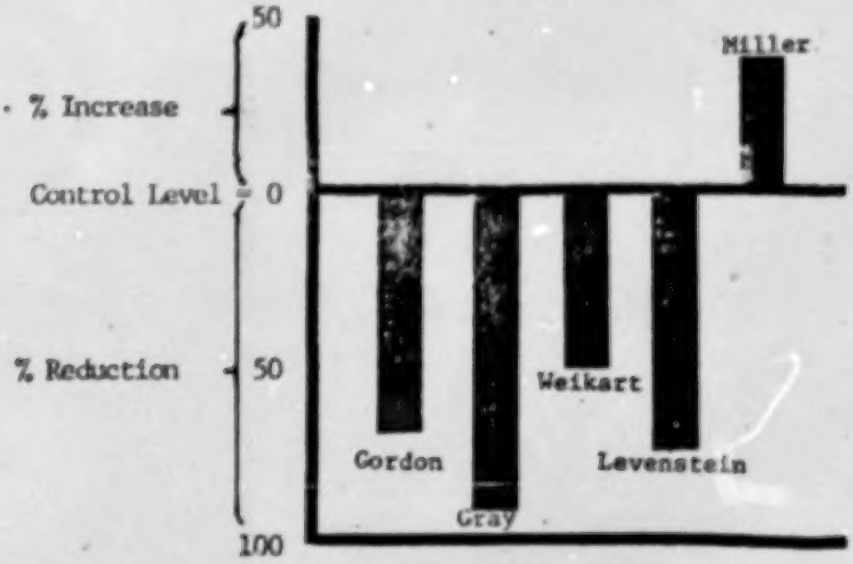
Figure 1: Percent of Program and Control Children in Special Education



Totals	Gordon	Gray	Weikart	Levenstein	Miller
Program Children	64	36	58	69	93
Control Children	20	17	65	23	16
Significance	.052	.017	.096	.004	.689

Pooled Significance Level p=<.0002 (two-tailed)

Figure 2: Percentage Reduction in Children in Special Education



with comparing different curricula rather than comparing program children with those who had not received any program.

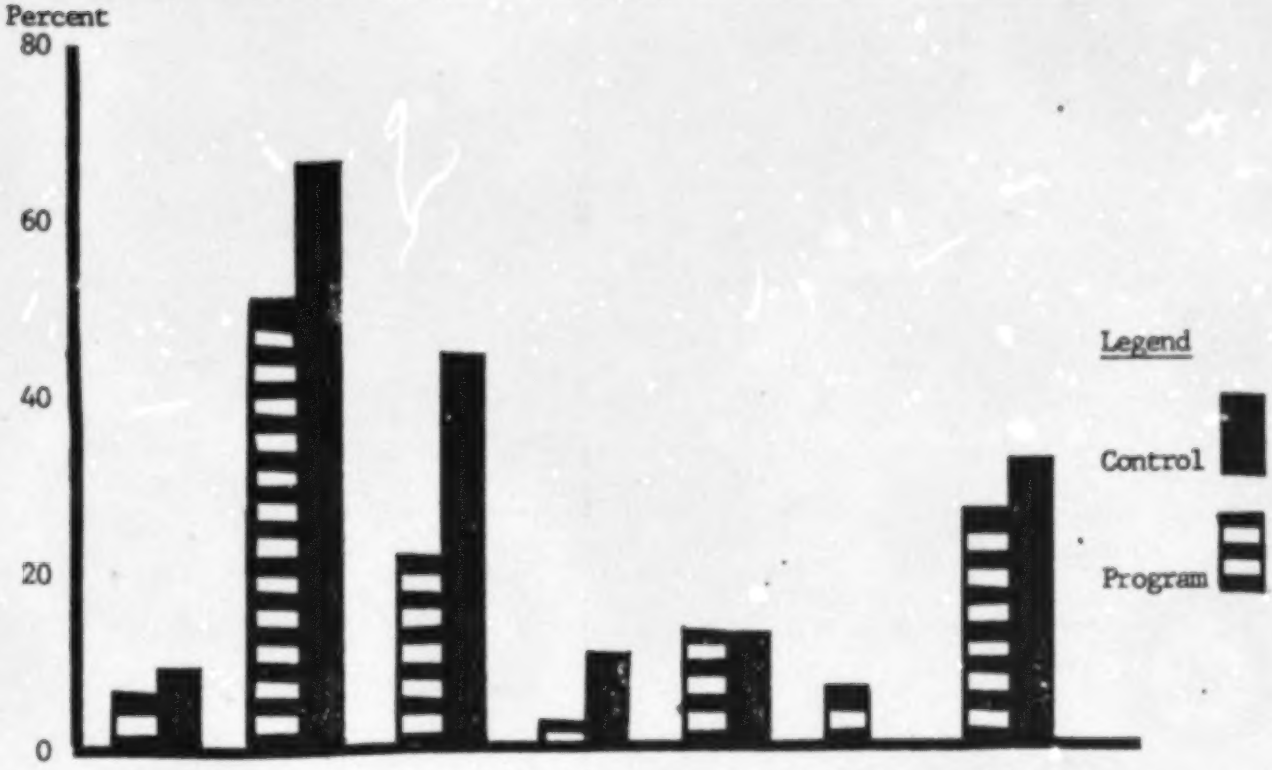
Figure 2 shows the percentage reduction in children in special education for these projects. For example, the Gordon control group data suggest that thirty out of every 100 children in samples such as theirs will be assigned to special education if they are not placed in an early intervention program. In contrast, their intervention program reduced that figure to 9.4 per 100. Thus their intervention reduced the number of children assigned to special education by 69% [(30-9.4)/30]. The percentage reductions range from 50.5% on Weikart's project to 90.5% on Gray's, with the Miller data providing an exception as mentioned above. Although the sample size for any individual project is rather small, certainly these data provide clear and strong evidence for the argument that supporting early education programs pays off. The cost of teaching a child in special education classes is substantially more than if he or she could perform acceptably in the normal classroom, to say nothing of the trauma to the child of being labeled slow or retarded.

2. Grade Retention

Data from seven projects comparing the percentage of program versus control children held back in grade once or more present evidence that early education can have an effect on whether or not children are retained in grade (see Figures 3 and 4).

One should first note that the percent of control children held back in grade varies far more among projects than does the percent of control children placed in special education. Our data do not provide

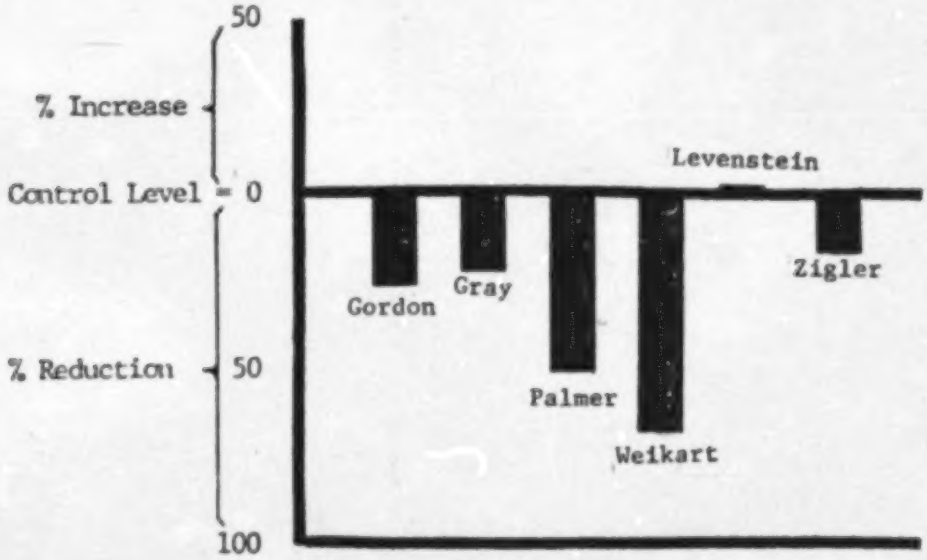
Figure 3: Percent of Program and Control Children Held Back a Grade



Totals	Gordon	Gray	Palmer	Weikart	Levenstein	Miller	Zigler
Program Children	70	33	131	58	68	105	79
Control Children	21	12	42	65	23	18	65
Significance	.920	.569	.001	.226	.984	.555	.570

Pooled Significance Level p=<.048 (two-tailed)

Figure 4: Percentage Reduction in Children Held Back in Grade



a clear explanation for this. However, one might speculate that it could be due to two factors. First, while assignment to special education often involves standard procedures, sometimes mandated by state law, promotion and retention in grade are in large measure a matter of school district policy. Some districts encourage 'social promotion,' for example, while others discourage it. Second, the longer a child has been in school, the more likely it becomes that she/he will have been retained at least once. This is reflected in our data; the projects which currently have older samples are generally those with the highest percentage of children (control and experimental) who have been retained.

In all but one study, there was a greater percentage of failures among the control than among the program children. When the results for seven projects are pooled statistically, the difference is significant at the 1% level of confidence. The same is true if one combines only the results of the four projects most closely approximating true experiments (Palmer, Gordon, Gray and Weikart). Thus, although the evidence is not so dramatic as it is for special education, the overall data do demonstrate that early education can reduce the rate of failure for low-income children.

3. The Micro-Social Learning System

Woolman's Micro-Social Learning System is discussed separately due to the nature of its control group. The subjects in Woolman's sample were originally selected because they were considered to be high-risk students. That is they were chosen for the project because they had characteristics usually associated with later failure in school. The

original study did not compare the high-risk program children with a control group because a large enough control group of high-risk children simply did not exist. Rather, the program children, who were largely from a low-income, Hispanic background, were compared with the general school population, which had middle class children as well as lower class children.

Two comparisons were then made: program children to the random sample of the general school population, and Spanish-surnamed program children to a random sample of Spanish-surnamed children in the general school population. The results are impressive. Even though the program children constituted the high-risk population of the school district, they were retained no more often than the general school population. Furthermore, a significantly lower percentage of the Spanish-surnamed program children were held back than Spanish surnamed children in general (32.8% program compared with 62.9% control).

The Micro-Social findings on the effect of the program on grade retention, then, are quite impressive because they indicate that, having had such an early intervention program, high-risk children were able to meet the minimal school requirements as well as the general school population. The special education data do not show as strong an effect. There is, however, a fairly marked difference that is close to statistical significance ($p = < .066$) when program children are compared to the general school population in their assignment to special education.

4. Summary of Special Education and Grade Retention Results

In sum, then, the data as a whole present very strong evidence that early education for low-income children improves their ability to

meet the minimal requirements of the schools they enter. This can consist of either reducing the probability of being assigned to special education classes or of reducing the probability of being held back in grade. Thus, it appears that early education can result in cost savings by reducing the rate of assignment to special education and/or the rate of grade failure. More importantly, there is now evidence that early education can improve the probability that low-income children will be able to perform acceptably in school and not become labeled as failures.

B. Analysis of Stanford-Binet IQ Scores

A second step of these analyses uses the Stanford-Binet IQ data,* collected independently by most of the projects over a number of years, to answer the question of whether the programs increased the average IQ scores of the children relative to a control group. At the time the programs began, pretests conducted on the children showed no significant IQ differences between those who were to receive the program and the controls. Comparisons of the mean posttest IQ's for the program and control groups were made for each project. When the scores were grouped by length of time after the end of the program and the significance levels were pooled, the evidence showed that early education can produce significant

* The Stanford-Binet was chosen for this analysis because it was the test most commonly used by the Consortium projects and because it has had a fairly large scale standardization. In using the Binet in this analysis, we are employing a very stringent criterion of success for these projects, all of which used many other tests to evaluate their programs. Each project could have achieved a significant improvement in the abilities toward which it was aimed without having evidenced a significant change in the Binet score. Therefore, a failure to improve the Binet IQ cannot be taken as a failure of a program to accomplish its goals. On the other hand, the success of a project in improving IQ scores means that it has accomplished at least one goal which our society deems important.

increases in IQ (over a control group) which last for up to three years after the child leaves the program (see Figure 5). Although the difference decreases over time, it does not do so as immediately as had been previously claimed by critics of early intervention.

C. Analysis of Wechsler

As part of the current follow-up, Wechsler Intelligence Tests were administered by the projects. Based on the results of five of the projects, it appears that the effect of early education on IQ, although shown to last several years, is probably not permanent. Only in the projects with the youngest children (nine and twelve years old) were the scores significantly greater for the program group. However, in no project were the controls significantly higher than the program children.

Taken as a whole, the IQ data refute two hypotheses:

(1) the hypothesis that early education has only a short-lived effect on IQ scores (i.e., that such programs basically train children to take tests and that the effects fade quickly as soon as the children are removed from the program); and

(2) the hypothesis that early education has a permanent effect on IQ scores. The evidence seems to indicate that well-run early education programs can increase a child's ability to perform well on IQ tests and that this increase in skills lasts for several years before it fades.*

The effect of early education then, in terms of skills which are measurable by IQ tests, is certainly of far more value than a temporary fluctuation in skill levels even if it should develop that these are not

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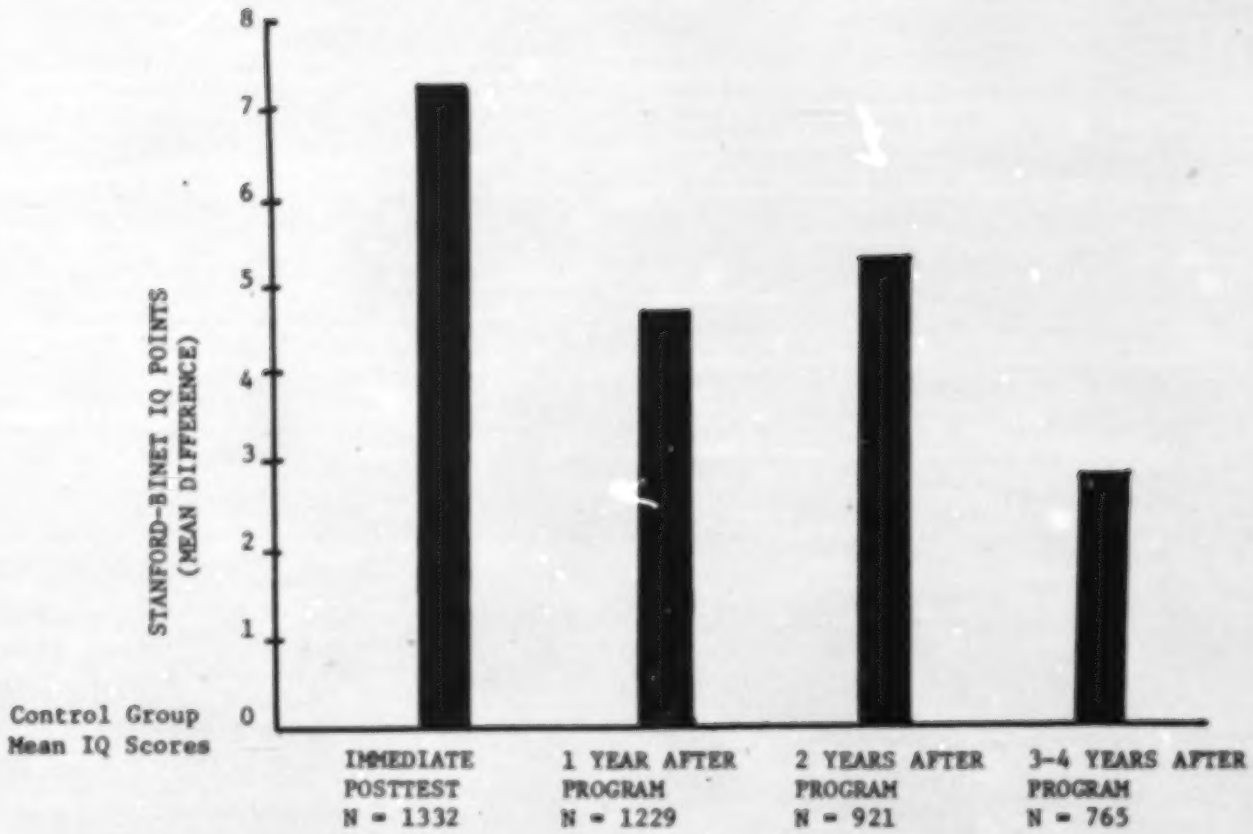
* It should be noted that these increases are precisely in those years - the primary grades in school - when basic academic skills are taught.

Figure 5: Differences in Mean IQ Scores Comparing Program and Control over Time



Pooled Significance Levels (two-tailed)*	$p < .0000$	$p < .0000$	$p < .0000$	$p < .0002$

PROJECTS INCLUDED by TIME PERIODS (N of SUBJECTS)

IMMEDIATE POSTTEST:	Beller	167	Gray ETP	87	Miller	244
	Deutsch	44	Levenstein	150	Palmer	280
	Gordon	196	Gray POHV	43	Weikert Perry	121
1 YEAR AFTER PROGRAM:	Beller	163	Gray POHV	51	Palmer	255
	Gordon	186	Levenstein	103	Weikart Carnegie	38
	Gray ETP	82	Miller	231	Weikart Perry	120
2 YEARS AFTER PROGRAM:	Beller	157	Gray POHV	48	Miller	221
	Gordon	187	Levenstein	109	Weikart Perry	119
	Gray ETP	80				
3-4 YEARS AFTER PROGRAM:	Beller	149	Gray ETP	80	Weikart Carnegie	36
	Gordon	179	Miller	203	Weikart Perry	118

* When the results are pooled statistically, the differences between program and control children is highly significant at each posttest time period.

a permanent increase in intellectual skills. Of course, changes in IQ (or any other index of social competence) involve a complex interaction over time between the potential the individual brings to the situation at any one point and the environmental context. It is not realistic to expect that a relatively brief period of intervention would, in and of itself, result in permanent IQ changes, just as a single childhood inoculation does not produce life-long immunity to disease. The educational processes that the child goes through following early intervention are undoubtedly crucial to the maintenance or fading of earlier gains.

D. Analysis of Schooling Variables from Youth Interviews

As a part of the follow-up, interviews were administered to the children and their parents. Analysis of the interview data will be a complex process and had been underway only a short time at the time of the final report. However, analyses to date produced several findings of relevance to this report.

Several variables from the Youth Interview provide information on educational attainment. Preliminary analyses indicate:

--a slight tendency for more control than program children to drop out of school, and a trend for control children who drop out to leave school at a younger age than program dropouts;

--that the children who participated in early education programs do not appear to have educational aspirations that differ from those of children who did not participate;

--evidence that program children rate how they feel they are doing in school higher than do children who did not participate in early education programs. This analysis is discussed below.

Enhancement of self-concept, a variable suggested to be related to educational attainment, was often an expressed goal of early intervention programs. The following question on the Youth Interview was designed as a measure of self-evaluation related to current self-concept in order to assess an important aspect of the long-term impact of such programs:

> "How are you doing (did you do) in your schoolwork; that is, overall, not just in one subject? Is your schoolwork...much better than the others, a little better than others, about the same as others, a little worse than others, much worse than others?"

The responses to this question indicated that, among subjects who are now at least fifteen years old, program children are significantly more likely than controls to rate themselves better than others in their schoolwork (see Table 2). This program effect appears in the sample when the subjects reach high school--a time when decisions about educational goals are critical. The younger children did not show this effect.

Table 2: Self-evaluation of School Work by Program or Control Status (older project sites only)

Self rating	% Control	% Program
Better than others	33.6	48.5
About the same	56.6	47.7
Worse than others	9.8	3.8
N of cases	122	132

$x^2 = 7.812$, $p = < .020$

PART IV

ANALYSIS OF PARENTAL EVALUATIONS

A section of the interviews asked parents of the experimental children to evaluate the programs that their children had attended approximately ten years earlier. The responses of the parents were consistently positive.

In answering the question, "Was the program a good thing for your child?" the overwhelming majority answered "Yes." This is illustrated in Table 3, as 100% of the parents whose children had been in home-based programs answered positively, as did 93.4% of the parents of children from center-based programs, and 87.8% of the parents of children from combination programs.

Table 3: Responses to Parental Interview Question "Was the Program A Good Thing for Your Child?" By Delivery System

N=684

Answer	Center N	Center %	Home N	Home %	Combination N	Combination %
Yes	412	93.4	87	100	137	87.8
No	10	2.3			2	1.3
Don't Know	19	4.3			17	10.9
Total	441	100	89	100	156	100
	$X^2 = 18.055$		$p = <.001$			

In order to determine the basis of their judgments about the value of the program, the parents were asked what they liked best. Overall, the category most often chosen related to the cognitive aspects of the program, although the answers varied across delivery systems (see Table 4). The next most popular areas were program characteristics which include teacher-child ratio, length of program, materials, etc. Other areas also highly approved included the total program, parental aspects and social aspects of the programs.

Table 4: Answers to the Question "What Did You Like Best About the Program Your Child Was In? By Delivery System

N = 605

	Center		Home		Combination		Overall Total	
	N	%	N	%	N	%	N	%
Cognitive Aspects	134	34.3	17	20.5	40	30.5	191	31.5
Program Characteristics	85	21.7	29	34.9	21	16.0	135	22.3
Social Characteristics	80	20.5	2	2.4	11	8.4	93	15.4
Total Program	43	11.0	15	18.1	24	18.3	82	13.5
Parental Aspects	29	7.4	19	22.9	31	23.7	79	13.0
Additional Services	15	3.8	1	1.2	2	1.5	18	2.9
Nothing	5	1.3			2	1.5	7	1.1
Total	391		83		131		605	

It is noteworthy that parents did not choose benefits to themselves more often than they did direct benefits to their children. That is, they did not view the programs simply as good babysitters or as ways to free up their own time.

In order to obtain more critical evaluations of the programs, parents were asked what they did not like and how they would have changed the program to make it better. By a wide margin, most parents responded that there was not anything they did not like. Over half said that they would not change anything about the program. The most common suggestions concerned changes in the program characteristics, such as increases in the length or frequency of the program.

In summary, the parents considered many aspects of the programs to have been valuable to their children. There was little that they did not like about the programs, and little that they would have changed. Clearly, these programs were highly successful in obtaining parental satisfaction.

PART VI

CONCLUSIONS AND IMPLICATIONS

A. Conclusions

If one accepts all of the assumptions inherent in the analyses, then the following conclusions seem reasonable:

1) Infant and preschool services improve the ability of low income children to meet the minimal requirements of the schools they enter. This effect can be manifested in either a reduced probability of being assigned to special education classes or a reduced probability of being held back in grade. Either reduction constitutes a substantial cost reduction for the school system.

2) Low income adolescents who received early education rate their competence in school higher than comparable adolescents who did not have preschool education.

3) As measured by the Stanford-Binet and the WISC tests preschool programs produce a significant increase in the intellectual functioning of low-income children at least during the critical years of the primary grades in school.

Probably the most important finding is that low income children who received early education are better able to meet the minimal requirements of their school. Results on IQ tests indicate that this may be due to an increase in intellectual skills which lasts through the very important primary grades in school. Additionally one might hypothesize that the reduction in rate of assignment to special education or of being held

back in grade is due in part to increased parental concern and competence to deal with the school system - an indirect effect of parental sensitization by the preschool experience of their children. This hypothesis is certainly supported by the fact that all of the projects which found significant effects on special education either were home visiting programs or had some visiting components. The two projects which found significant effects on grade failure had somewhat lesser degrees of parental involvement. At this point, then, the evidence does not differentiate between the relative contribution to the effects on school performance of increased intellectual skills in the child and increased parental concern with the child's learning. The positive effect of early education on school performance is now fairly well established, but the mechanism by which it has this effect is still open to conjecture.

The evidence also suggests that, with respect to school performance, there is as of now no indication of a "magic age" at which early intervention is most effective. Projects having significant effects on assignment to special education were Gordon (education from birth to two years of age), Gray ETP (four and five years of age) and Levenstein (two and three years of age). Projects having significant effects on grade failure were Palmer (two and three years of age) and Woolman (four years of age). Further, programs which had significant effects ranged in duration from eight months (Palmer) to up to three years (Gordon). The most that can be said is that, at this point, there is no indication of a most effective age or length of intervention. However, given the relatively small number of programs investigated and the relatively large number of confounding factors (geographic region, cohort, school

policy, etc.), it is possible that such magic points exist, but are not discoverable without a more rigorous, large scale experiment designed specifically to answer those questions.

In sum, the most important conclusion which has been reached to date from this body of data is that well-run early education programs can in some way improve the ability of low income children to meet the requirements of their schools.

B. Implications and Recommendations for National Policies and Programs

In examining both the statistically significant findings, and the trends which appear across these studies, certain policy implications seemed clear to us. While further analyses and other data will be necessary to fully document these implications, we felt it important that they be listed now, even in their somewhat tentative state.

1. Day Care

These findings indicate that the failure to require a deliberate, well planned curriculum for young children in federally supported day care programs is likely to cost more money in later special education expenditures than would be saved in day care costs. We recommend that the educational requirement not only be restored to the Federal Requirements, but should be made explicit.

2. Program Delegation

While it is difficult to generalize across all public schools, in none of the public schools who sponsored preschool programs included in this study were parents involved as teachers of their own preschool children. Neither did they mount home-based services, nor accept children under four years of age. Further -- there are exceptions -- most public schools have rigidly defined and highly structured curricula,

and the typical supervisory structure of a public school does not permit very much leeway in structure. The tendency to adopt uniform policies and philosophies in districts mitigates against the capacity of many school districts to be responsive to individual and subcultural needs in the way a fifteen-child Head Start site can.

Until further research data are available, it would seem imprudent to assign either day care or Head Start responsibilities solely to school districts in general. In some communities the school could be the optimal site. But respect for individual differences in children suggests that many kinds of auspices are a safer choice than is delegation of such programs to a single type of auspice.*

3. Age, Duration and Type of Curriculum

The data in this report do not clearly indicate that either a particular age, or a particular length or type of preschool experience is optimal for all children. Future analyses of these data may assist in these policy areas.

4. Head Start

We see three major implications for Head Start programs which flow from these preschool findings.

a. A large national random sample of new Head Start enrollees and their parents (or whole sites) should be identified so that baseline data** could be collected prior to the program experience. We believe that fears of rejection of such data collection at entry by parents are overblown, that most parents are accustomed to an intake procedure for public

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* These experiments were carried out under various auspices -- public schools, Head Start Centers, independent agencies and universities. Quality control may be more important than auspice.

** We can make suggestions as to the implementation of this recommendation.

services. Without such baselines and an initially tight research design, later evaluations of typical Head Start programs are not possible.

b. A careful review of the extent to which structured curricula are actually being used in Head Start programs should be carried out. Further steps may need to be taken to insure that deliberate learning goals are identified and teaching strategies implemented.

c. The establishment of PCC's as a demonstration program a decade ago, and of Home Start some seven years ago, may have been necessary to try those ideas out. To keep these services separated from "regular" (i.e., center-based) Head Start operations seems no longer justified. The evidence suggests that all Head Starts be encouraged to adopt PCC and Home-Start services (and age groups) as part of their regular programs, to obtain the benefits of earlier and mixed-locus intervention. The separate PCC's and Home Start Centers could be converted into training sites during the period of introduction of their services into Head Start programs, and then could be expanded in scope to become "regular" Head Starts.

Finally, and recognizing the self-serving nature of this recommendation, we think that this study provides a reason why Head Start research funds should be increased, with a greater portion of those funds reserved for investigator-designed rather than contract-designed studies.